

IN THE CLAIMS:

Please amend claims 1, 8, 50, 66 and 80 as follows:

C1 1. (Three Times Amended) A method of producing a semi-solid material without stirring, comprising:

heating a metal alloy to form a metallic melt;

regulating the transfer of an amount of the metallic melt into a temperature-controlled vessel; and

crystallizing the metallic melt in the vessel by cooling the metallic melt at a controlled rate less than 0.5 degrees Celsius per second without the use of a grain refiner and without mechanical agitation at any point during the crystallizing to form a semi-solid material having a microstructure comprising rounded solid particles dispersed in a liquid metal matrix and having an average diameter no greater than about 50 μm .

C2 8. (Twice Amended) The method of claim 1, wherein the regulating further includes preheating the vessel to a selected vessel temperature prior to transferring the metallic melt into the vessel.

C3 50. (Three Times Amended) A method of semi-solid forming a shaped article, comprising:

providing a metal alloy, a temperature-controlled vessel and a mold;

heating the metal alloy to form a metallic melt;

regulating the transfer of an amount of the metallic melt into the temperature-controlled vessel; and

C3 crystallizing the metallic melt in the vessel by cooling the metallic melt at a controlled rate less than 0.5 degrees Celsius per second to produce a semi-solid material having a microstructure comprising rounded solid particles dispersed in a liquid metal matrix;

feeding the semi-solid material from the temperature-controlled vessel directly into the mold without transferring the semi-solid material to an intermediate container; and

forming the semi-solid material into a shaped article.

C4 66. (Twice Amended) A method of producing a semi-solid material without stirring, comprising:

heating a metal alloy to form a metallic melt;

preheating a temperature-controlled vessel to a selected vessel temperature prior to transferring metallic melt therein;

regulating the transfer of a select amount of the metallic melt into the vessel, the regulating comprising:

transferring the metallic melt into the vessel at a selected transfer temperature and at a selected transfer rate; and

controlling a differential between the temperature of the metallic melt during the heating and the temperature of the metallic melt during the transferring; and

crystallizing the metallic melt in the vessel by cooling the metallic melt at a controlled rate

c4 without the use of a grain refiner and without mechanical agitation at any point during the crystallizing to form a semi-solid material having a microstructure comprising rounded solid particles dispersed in a liquid metal matrix.

c5 80. (Amended) The method of claim 50, wherein the regulating includes preheating the vessel to a selected vessel temperature prior to transferring the metallic melt into the vessel, the selected vessel temperature being approximately equal to the temperature of the metallic melt.
